powrmatic

PON Series Cast Iron Boilers

Installation,Operation & Maintenance Manual

Cast Iron Sections
Triple Pass Design
163 kW - 355 kW

CE

REV.02 / 2010-ON

Contents :

Description	3
Certifications , Symbols	3
General Warnings	4
Safety Instructions	5
General Characteristics of PON series Boilers	6
Boiler Dimensions , Delivery Conditions	7
Information on the Boiler Plate	8
Technical Parameters	9
Recommended Minimum Distance for Installation	10
Important Instructions About Boiler Room	11
PON Series Cast Iron Boiler Parts and Spare Parts List	12
Cast Iron Sections with High Efficiency Design , Boiler Room Ventilation	13
Plumbing Instructions	14
Gas Side Resistance and Exit Flue Gas Temperature	15
Important Instructions About Flue and Connecting the Fuel Tank	16
Boiler Control Panels	17
Standart Control Panel Electric Diagram	18
Operating Instructions , Loading and Unloading The Boiler Water	19
Checking and Starting the Boiler	20
Care Instructions , Cleaning the Boiler	21
Burner Door and Burner Connection	22
Instructions for Product Disposal , Positioning the Boiler	23

Description :

- In this manual you will find the instructions for Rima three pass cast iron boilers suitable for both gas and liquid fuel. ON series hot water boilers and related informaton for installation,operation and maintenance of the boiler. For high efficiency and proper working conditions please read this manual carefully. For more information please check the product brochure or get in touch with Rima technical services.

- Please do not touch or remove any parts of the boiler for starting,adjusting or repairing the boiler except the processes written in this manual.

- Please call Rima services and technical officials for installing the boiler.

- Our licensed frenchisers and services will give you instructions about working principals,conditions and care instructions after installing and starting the boiler.

- Our professionals will be glad to answer all your questions at any time.

Certifications :

PON Series boilers are in compliance with ;

EC Directives :

(90/396/EEC) Gas Appliances Directive

(92/42/EEC) Efficiency Directive

(89/336/EEC) Electromagnetic Compatability Directive

EN 303/1: Heating boilers with forced draught burners - Terminology, general requirements, testing and marking

EN 303/2: Heating boilers - Part 2: Heating boilers with forced draught burners - Special requirements for boilers atomizing oil burners

EN 303/3: Heating boilers-Part 3: Gas fired heating boilers-Assembly comprising a boiler body and a forced draught burner

PON SERIES CE approved, No: **CE-1015BR0261**

Please , consider on the standards in installation.

Symbols :

Caution , Danger

Important

Info

General Warnings :

- ON series cast iron boilers are designed for working with hot water heating and/or hot water plumbing and produced with the proper technology and materials suitable for this design.This design is restricted to use out of it's aim of use.
- ON series boilers are delivered as sections and services assemble the boilers in the operation area.The assembling of the boiler must be made by Rima technical services . Removing or re - assembling of the boiler should also be made by licensed Rima services, if not the risk of damage is high.
- In the assembling of the boiler; there must be a proper and safe concrete platform for to put the boiler on.
- In the assembling of the boiler,an empty space must be left from sides for safety requirements and for future repairing operations.
- Starting and first operation of the boiler must be made by authorized Rima technicians.
- Do not add or pump water to the boiler or plumbing system as it is working and hot . For adding water to the boiler or to the system please wait for water temperature to reach 40ºC. Circulation pump must surely be started while adding water to the system . If not , the sections may crack.
- If the boiler will be kept off for a long time the electric system must be shut down from the main fuse.The electric must be cut off from the main shelter/fuse as the boiler is in repair,service or cleaning.
- In summer months, when the boiler is off for a long term, for preventing probable problems with circulation pumps, must be started 1 -2 times per month for 5 minutes. (The water with chalk can cause problems , if the pump is not used for long time period.)
- The periodical controls of the boiler and the burner must be done. If not, the boiler may lose efficiency and the fuel amount used may increase.
- The capacity choice of the boiler must be made according to the projects that prepared properly in the terms of related standards.If not , the boiler efficiency will be low.
- ON series boilers are produced for heating only. For heating the sanitary water another equipment such as water heater or heat exchanger is needed.For proper efficiency in this operation,correct water heater or heat exchanger must be selected.
- ON series boilers are delivered without burners. For suitable burner selection please get in touch with Rima technicians. Suitable burners must be selected for taking high efficiency.
- If the boiler is stopped automatically because of overheating do not add cold water to the boiler for re-starting. In this case wait for the boiler to cool down and re- try starting.If it does not start ,please get in contact with technical services.
- In cleaning, repair and other care operations the original spare parts which approved and manufactured by Rima , must be used.
- The periodical and yearly controls of the boiler must be done properly and on time.Natural gas is a clean fuel and doesn't make a lot of dirt in the boiler.But the boilers that liquid fuels are used as fuels are much more easily get dirt. Controls and care operations of the boiler is needed for keeping high efficiency and long life of the boiler.
- Repairing and periodical controls of ON series boilers requires profession.In this manual the responsibilities and required information for users of the boiler is declared. Besides these declared operations, boiler must not be started by a person rather than the user or one of our technicians.Please do not try to make adjustment or do not touch any parts of the boilers.
- The electricity of the burner and boiler is supplied by city electric network.In this case the electric and lighting systems of the boiler room, burner and boiler electrical connections, grounding line of control panel and boiler must be made by professionals under the required and related standards.
- In this manual you will find informations only for the boilers. Please do not forget to get the instruction manual of the burner that you purchase from the manufacturer of it. Burner is not delivered with the boiler. In this case we do not give any guarantee for the burner that you purchase. Please get the guarantee certificate for the burner from your supplier.
- Please be sure that the front door (burner door) for the boiler is strictly closed and burner connections are properly made as the boiler is working.

Safety Instructions :

Always observe the following safety instructions and regulations.

Always perform the following steps prior to inspection work.

- Close the gas shut-off valve.
- Close the heating feed and return.

Danger!

- If you smell gas, risk of poisoning and explosion due to a malfunction!

If you smell gas :

- Do not switch lights on or off.
- Do not use any other electrical switches.
- Do not use a telephone in the area of the hazard.
- Do not use naked flames (such as matches or cigarette lighters).
- Do not smoke.
- Close the gas stop cock.
- Open the windows and doors.
- Warn other residents.
- Get out of the house.
- Notify your gas supplier or a suitably qualified heating engineer.

Danger!

- Inflammable mixtures of gas and air may explode.
- Do not use or store explosive or easily flammable substances such as petrol or paint in the same room as the applience.
- Risk of poisoning and explosion due to a malfunction.
- Never put the safety devices out of operation or tamper with them so as to impair their function.

Safety Caution!

- Inappropriate alterations can cause damage!
- Under no circumstances should you ever attempt to make alterations to the gas heating boiler or other parts of the system.Never try to carry out maintenance work or repairs on the appliance yourself.
- Do not damage or remove seals on components.Only suitably qualified heating engineer or our customer service may removed sealed components.
- Do not touch hot water connections or the flue outlet when the boiler is operating.

Caution!

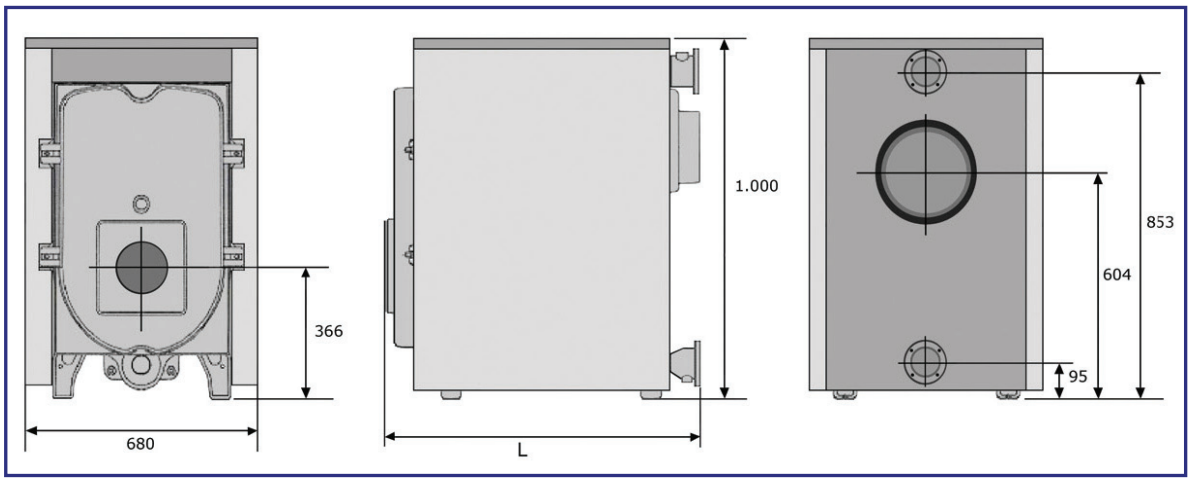
Risk of damage!

- Do not use sprays, solvents, chlorinated cleaning agents, paint, adhesives or similar substances in the vicinity of the appliance. These substances can cause corrosion, including in the flue system.

General Characteristics of PON series Boilers :

- ON series boilers are, blowing burner, cast iron sectioned, between the capacities 163 – 355 kW with proper burner connection, works with gas or liquid fuel in 7 different (5 – 11 sections) type.
- ON series boilers operating pressure is 6 bar maximum, and working temperature is 90 °C maximum.
- In ON series boilers,heat transfer surface areas are increased by the special wings in the burning room and chimney ways.This increases the heat transfer ability of cast iron boiler to the maximum level.
- ON series boilers are cast iron sectioned boilers.This brings easy assembling and easy capacity increasing by adding sections to the boiler. The transportation and installation of the boiler is easy because of the boiler is assembled in boiler rooms. It is easily to carry or shift position without breaking walls etc.
- ON series boilers are produced from special cast iron alloy EN GJL 200 , which gives high resistance against corrosion and thermal expansions. They are long life boilers according to this special cast iron alloy.
- With the help of horizontal and three pass specially designed sections burning gases pass three times in the boiler and transmits burning energy to the water inside the sections at high level.
- ON series boilers are high efficiency boilers. (According to the fuel max. heating value % 91 – 93). With this high efficiency and perfect isolation more energy is gained with less fuel. Heat loses are minimized on ON series boilers.
- By appropriate burning room, heat transfer surface, turbulator, collector and isolation high heat transfer and optimum flue gas emission results are provided.

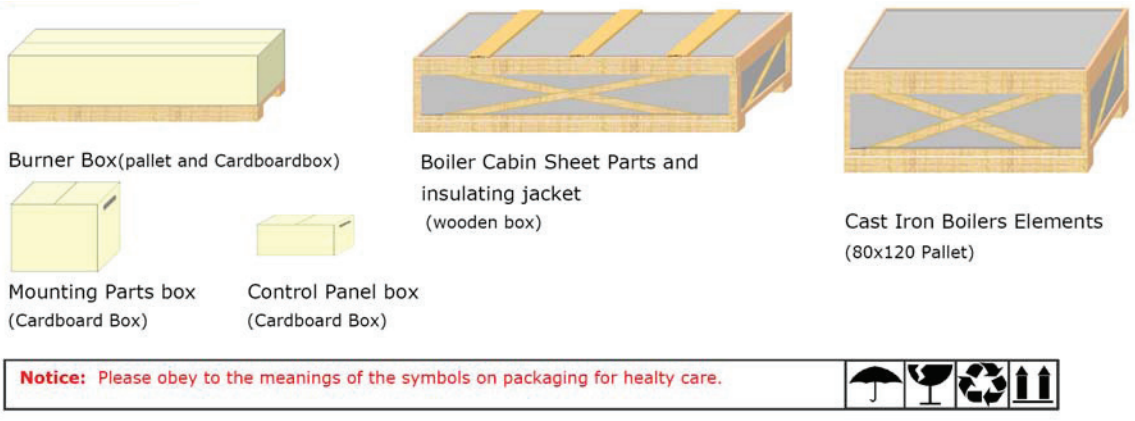
Boiler Dimensions :



Series	ON - 05	ON - 06	ON - 07	ON - 08	ON - 09	ON - 10	ON - 11
Boiler Length L (mm)	1070	1215	1360	1505	1650	1795	1940

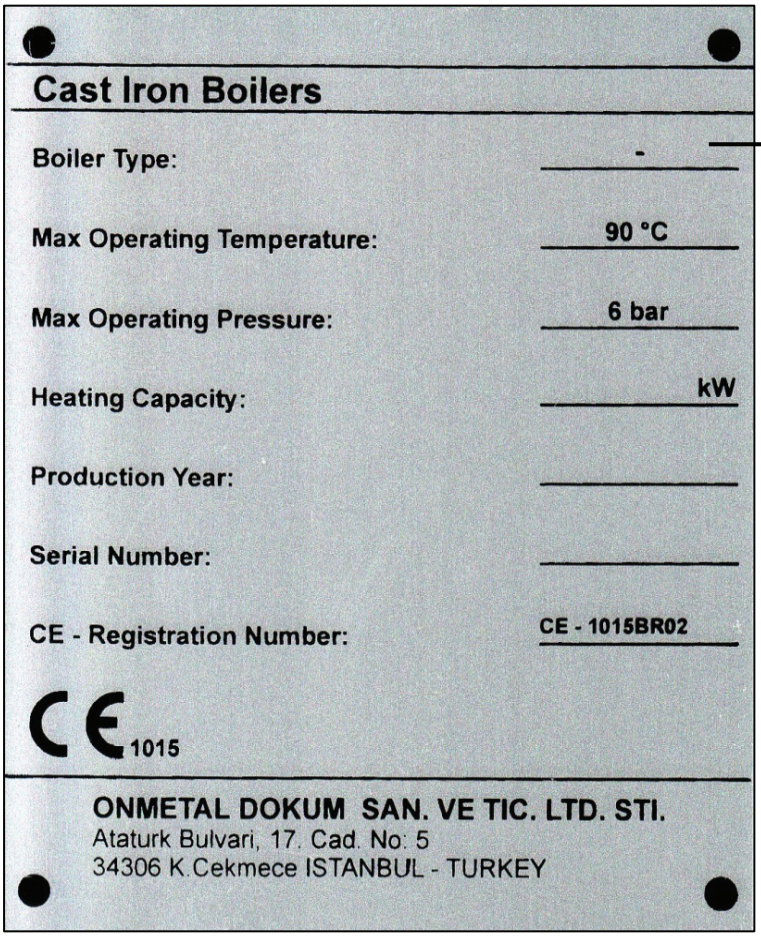
Delivery Conditions :

- Boiler sections are delivered as not - assembled according to the boiler room specifications and dimensions.In not assembled deliveries, sections and assembling aparats are delivered on a pallet, cabins,isolation and other elements are delivered in a box. Rima technicians make the assembling of the boiler.


Burner Box(pallet and Cardboardbox)
Boiler Cabin Sheet Parts and insulating jacket
(wooden box)
Cast Iron Boilers Elements
(80x120 Pallet)
Mounting Parts box
(Cardboard Box)
Control Panel box
(Cardboard Box)
Notice: Please obey to the meanings of the symbols on packaging for healty care.

Information on the Boiler Plate :

The identification plate is mounted on the back side of the boiler cabin.

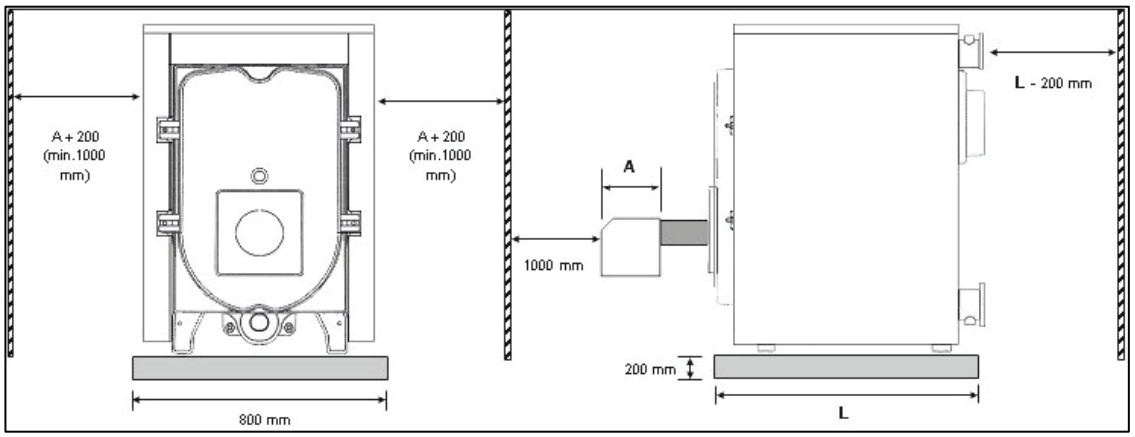

Cast Iron Boilers
Boiler Type: -
Max Operating Temperature: 90 °C
Max Operating Pressure: 6 bar
Heating Capacity: kW
Production Year:
Serial Number:
CE - Registration Number: CE - 1015BR02
CE 1015
ONMETAL DOKUM SAN. VE TIC. LTD. STI.
Ataturk Bulvari, 17. Cad. No: 5
34306 K.Cekmece ISTANBUL - TURKEY

PON-05 , P0N-06,PON-07 …

Technical Parameters :

Model			ON 05	ON 06	ON 07	ON 08	ON 09	ON 10	ON 11
Number Of Sections		Pcs.	5	6	7	8	9	10	11
Heat Output		kW	163	195	227	259	291	323	355
		kCal/h	140.000	167.500	195.000	222.500	250.000	277.500	305.000
Heat Input		kW	177	211	246	281	316	351	385
Operating Temperature		max °C	90						
Range Of Temperature Control		°C	30 - 90						
Gas Side Resistance		mbar	1,25 - 1,60	1,35 - 1,70	1,55- 1,90	1,78 - 2,20	2,08 - 2,50	2,37 - 2,80	2,65 - 3,10
Maximum Operating Pressure		Max. bar	6						
Boiler Water Content		Litres	77	93	109	125	141	157	173
		m³	0,077	0,093	0,109	0,125	0,141	0,157	0,173
Exit Flue Connection Diameter		mm	180		250				
Combustion Chamber Dimensions	W x H	mm	442 x 391						
	L	mm	691	835	979	1.123	1.267	1.411	1.555
Water Input - Output Connection		DN (")	DN 80 (3")						
Gas Volume Of the Boiler		dm³ (lt.)	142,17	170,43	198,69	226,95	255,21	283,47	311,73
		m³	0,142	0,170	0,199	0,227	0,255	0,283	0,312
Gas Volume Of the Combustion Chamber		dm³ (lt.)	101,89	122,15	142,40	162,65	182,91	203,16	223,41
		m³	0,102	0,122	0,142	0,163	0,183	0,203	0,223
Safety Temperature Limiter		°C	100						
Boiler Type			ON / OFF						
Fuel Type		Gas	Natural Gas (I2H)						
		Liquid F.	Liquid Fuel (Extra Light Heat Oil)						
Exit Flue GasTemperature	Full Load	°C	182 - 187	178 - 185	175 - 180	173 - 178	173 - 175	170 - 173	172 - 170
	Part Load	°C	165 - 172	164 - 170	162 - 168	161 - 165	160 - 165	158 - 163	156 - 161
Exit Flue Gas Mass Flow	Full Load	kg / h	273	326	380	433	487	540	594
(%13 CO_2) % 60	Part Load	kg / h	164	196	228	260	292	324	356
Chimney Effect		Pa	5						
Burner Type			Short Barrel						
Burner Flange Connection Dimension		mm	185						
Standby Loss		%	0,25	0,24	0,22	0,20	0,19	0,18	0,16
		kCal/h	3.780	4.342	4.633	4.806	5.130	5.395	5.270
Boiler Length (L)		mm	1.070	1.215	1.360	1.505	1.650	1.795	1.940
Dry Weight		Kg.	483	560	636	715	792	869	947
CE - Registration Number			CE - 1015BR261						

Recommended Minimum Distance for Installation:



Platform Dimensions :

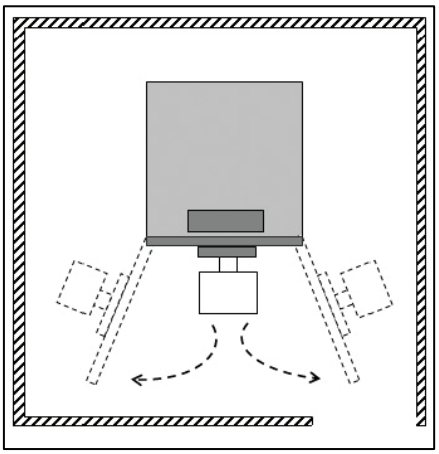
Boiler Type	ON - 05	ON - 06	ON - 07	ON - 08	ON - 09	ON - 10	ON - 11
Platform Length L (mm)	1170	1315	1460	1605	1750	1890	2035

Do not put flammable materials on top of the boiler or near the boiler than specified safety distance.

The measurements of the boiler room and the empty spaces must be arranged properly for future assembling repairing, re-assembling, burner connecting issues.

* The concrete platform must be in the mentioned dimensions.
* Concrete platfrom must not be coated with slipper materials such as ceramics etc.
* If sound isolaton will be made , first do the sound isolation than make the concrete for platform.
* Platfroms must be made of BS 25 concrete and scales.

- In ON series boilers burner doors can be opened to both sides. According to this the required empty spaces for the both sides are given equal (min. 700 mm). This will gives advantages for operations. If the boiler room area is not enough for this you can choose one side and leave the big empty space there. Half of this empty space will be enough for the other side in these conditions.

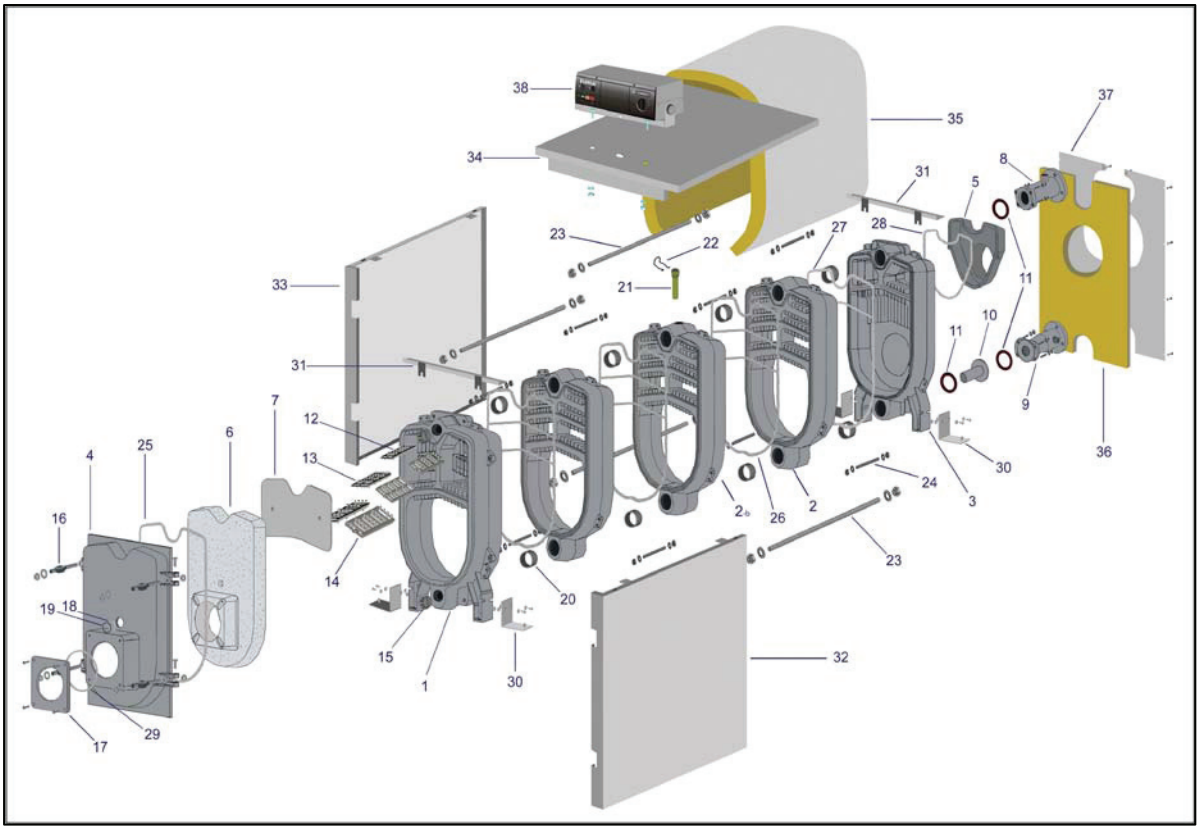


- There must be space for the tools that will be used in boiler room.

Important Instructions About Boiler Room:

- There must not be any other equipments such as aspirator, air condition central etc. in the boiler rooms. These kind of equipments can make vacuum effect and defect boilers pull force. This can cause burner failures.
- The ceiling of the boiler room can be isolated for sound and heat isolation. The position and place of the boiler is important for sound isolation of the boiler.
- Boiler room must have a good lighting and control switches of lighting must be outside of the boiler room.
- There must not be equipments like water pump,contactor etc.. in the boiler room.
- Gas alarm equipments must be placed to the proper highth as mentioned on standards.
- No one except the responsible person should get in to the boiler room.
- Children must not enter to the boiler room. A second key must be kept in safe place for urgent matters.
- Fuel tanks must be put in another place which is rounded by walls.Natural air conditioning is needed for this place.
- Boiler room must be air conditioned by natural or other ways.
- Humidity must be prevented in boiler room.
- Boiler room must have the requested dimensions .
- There must not be any kind of explosive , burning and flammable materials in the boiler room.
- There must not be any kind of explosive , burning and flammable gases in the boiler room atmosphere.
- For the efficiency of the burner and the boiler,boiler room must be kept clean and dry.
- For feeding water to the boiler,water line must be arranged near the boiler. And for filling out the water of the boiler in necesarry conditions, there must be a connection to drainage in the system.
- If there are any electric keys, cables etc. Which can cause short circuits must be fixed, renewed as soon as possible.
- In Natural Gas or LPG use ; boiler room,flue,system and plumbing issues must be under parameters of EN standarts and gas offices orders. Rima is not responsible for any failure or problems that will be occured because of inadequate or not sufficiently qualified conditions of boiler room, plumbing and other systems.
- The instructions of local gas delivery must be applied.
- Before painting , keep flammable materials out.
- Before any welding operation in boiler room, boiler must be stopped and the gas flow must be stopped by turning of the gas valve.
- Do not touch the boiler when it is hot.
- Boiler must not be installed on carpet.
- Switch off the boiler immediately if there is danger of burning or explosion (elecricity problem, gas leakage, liquid gas , etc.).

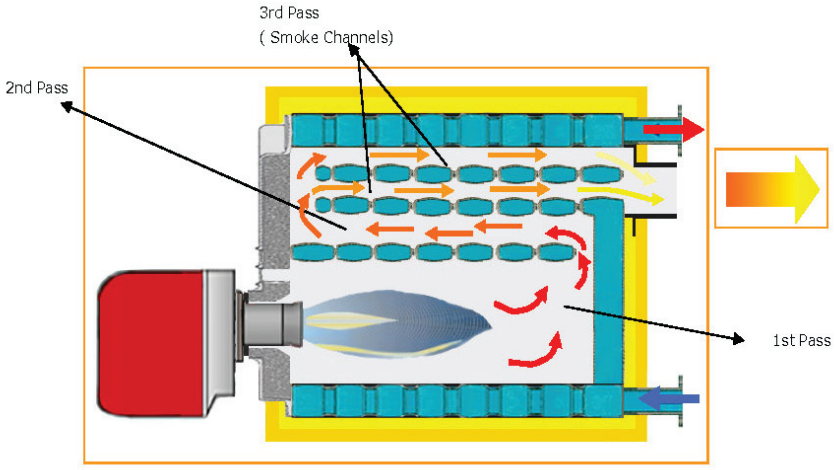
PON Series Cast Iron Boiler Parts :



PON Series Cast Iron Boiler Spare Parts List :

SPARE PARTS		DRAWING	PART NUMBER						
ITEM	DESCRIPTION	NO	ON - 05	ON - 06	ON - 07	ON - 08	ON - 09	ON - 10	ON - 11
01	FRONT SECTION	ON 00115	ON - 060	ON - 060	ON - 060	ON - 060	ON - 060	ON - 060	ON - 060
02	MIDDLE SECTION	ON 00116	ON - 050	ON - 050	ON - 050	ON - 050	ON - 050	ON - 050	ON - 050
02-b	MIDDLE SECTION - WITH HOLE	ON 00117	ON - 051	ON - 051	ON - 051	ON - 051	ON - 051	ON - 051	ON - 051
03	BACK SECTION	ON 00118	ON - 070	ON - 070	ON - 070	ON - 070	ON - 070	ON - 070	ON - 070
04	BURNER DOOR	ON 00119	ON - 080	ON - 080	ON - 080	ON - 080	ON - 080	ON - 080	ON - 080
05	CHIMNEY	ON 00120	ON - 090	ON - 090	ON - 095	ON - 095	ON - 095	ON - 095	ON - 095
06	BURNER DOOR ISOLATION	ON 00121	ON - 085	ON - 085	ON - 085	ON - 085	ON - 085	ON - 085	ON - 085
07	BURNER DOOR ISOLATION COVER	ON 00122	ON - 086	ON - 086	ON - 086	ON - 086	ON - 086	ON - 086	ON - 086
08	WATER OUTLET FLANGE	ON 00123	ON - 072	ON - 072	ON - 072	ON - 072	ON - 072	ON - 072	ON - 072
09	WATER INLET FLANGE	ON 00124	ON - 073	ON - 073	ON - 073	ON - 073	ON - 073	ON - 073	ON - 073
10	WATER INLET FLANGE PIPE	ON 00125	ON - 074	ON - 074	ON - 074	ON - 074	ON - 074	ON - 074	ON - 074
11	FLANGE GASKET	ON 00126	ON - 075	ON - 075	ON - 075	ON - 075	ON - 075	ON - 075	ON - 075
12	SMALL TURBULATOR	ON 00127	ON - 110	ON - 110	ON - 110	ON - 110	ON - 110	ON - 110	ON - 110
13	MIDDLE TURBULATOR	ON 00128	ON - 120	ON - 120	ON - 120	ON - 120	ON - 120	ON - 120	ON - 120
14	BIG TURBULATOR	ON 00129	ON - 130	ON - 130	ON - 130	ON - 130	ON - 130	ON - 130	ON - 130
15	STOPPER 2"	ON 00130	ON - 087	ON - 087	ON - 087	ON - 087	ON - 087	ON - 087	ON - 087
16	BURNER DOOR LOCK HINGE	ON 00131	ON - 081	ON - 081	ON - 081	ON - 081	ON - 081	ON - 081	ON - 081
17	BURNER ASSEMBLING FLANGE	ON 00132	ON - 082	ON - 082	ON - 082	ON - 082	ON - 082	ON - 082	ON - 082
18	FLAME OBSERVATION GLASS	ON 00133	ON - 088	ON - 088	ON - 088	ON - 088	ON - 088	ON - 088	ON - 088
19	O.GLASS SEGMENT	ON 00134	ON - 089	ON - 089	ON - 089	ON - 089	ON - 089	ON - 089	ON - 089
20	NIPPLE	ON 00135	ON - 030	ON - 030	ON - 030	ON - 030	ON - 030	ON - 030	ON - 030
21	THERMOSTAT BULB	ON 00136	ON - 040	ON - 040	ON - 040	ON - 040	ON - 040	ON - 040	ON - 040
22	THERMOSTAT BULB SEGMENT	ON 00137	ON - 041	ON - 041	ON - 041	ON - 041	ON - 041	ON - 041	ON - 041
23	CASTING BLOCK CONNECTION ROD	ON 00138	ON - 015	ON - 016	ON - 017	ON - 018	ON - 019	ON - 020	ON - 021
24	SECTIONS CONNECTION ROD	ON 00139	ON - 025	ON - 025	ON - 025	ON - 025	ON - 025	ON - 025	ON - 025
25	BURNER DOOR ISOLATION ROPE	ON 00140	ON - 083	ON - 083	ON - 083	ON - 083	ON - 083	ON - 083	ON - 083
26	MIDDLE SECTION ISOLATION ROPE	ON 00141	ON - 052	ON - 052	ON - 052	ON - 052	ON - 052	ON - 052	ON - 052
27	BACK SECTION ISOLATION ROPE	ON 00142	ON - 071	ON - 071	ON - 071	ON - 071	ON - 071	ON - 071	ON - 071
28	CHIMNEY ISOLATION ROPE	ON 00143	ON - 091	ON - 091	ON - 091	ON - 091	ON - 091	ON - 091	ON - 091
29	BURNER ASSEMBLING FLANGE ISOLATION ROPE	ON 00144	ON - 084	ON - 084	ON - 084	ON - 084	ON - 084	ON - 084	ON - 084
30	CABIN ASSEMBLY LEG	ON 00145	ON - 035	ON - 035	ON - 035	ON - 035	ON - 035	ON - 035	ON - 035
31	CABIN ASSEMBLY EAR	ON 00146	ON - 036	ON - 036	ON - 036	ON - 036	ON - 036	ON - 036	ON - 036
32	RIGHT SIDE COVER PANEL	ON 00147	ON - 255	ON - 256	ON - 257	ON - 258	ON - 259	ON - 260	ON - 261
33	LEFT SIDE COVER PANEL	ON 00148	ON - 265	ON - 266	ON - 267	ON - 268	ON - 269	ON - 270	ON - 271
34	TOP COVER PANEL	ON 00149	ON - 305	ON - 306	ON - 307	ON - 308	ON - 309	ON - 310	ON - 311
35	CASTING BODY INSULATION	ON 00150	ON - 405	ON - 406	ON - 407	ON - 408	ON - 409	ON - 410	ON - 411
36	REAR COVER PANEL ISOLATION	ON 00151	ON - 045	ON - 045	ON - 045	ON - 045	ON - 045	ON - 045	ON - 045
37	REAR COVER PANEL	ON 00152	ON - 046	ON - 046	ON - 046	ON - 046	ON - 046	ON - 046	ON - 046
38	CONTROL PANEL	ON 00153	ON - 200	ON - 200	ON - 200	ON - 200	ON - 200	ON - 200	ON - 200

Cast Iron Sections with High Efficiency Design :



- 3 draught design forces the flue gas to circulate inside the body of the boiler three times before the chimney exit, transferring all usefull energy to the water inside the sections. The optimized combustion chamber combined with perfect heat insulation provides maximum fuel efficiency.
- The combustion room of the boiler is positive pressure. Boiler is working under horizontal 3 pass principal.

Boiler Room Ventilation :

There are three reasons for fresh air in boiler rooms.

1.The air needed for the burning in the boiler.
2.The air needed for prevention of dirt and dust,for releasing the gases and fuel to put out.
3.The air needed for overheating in the boiler room.

Ventilation for first two reasons are continously needed.The third one is needed especially for the boilers which are working on summer time.

Maximum temperature for the boiler room must be 32 °C and boiler room must be protected against freezing.

Boiler Type	ON 05	ON 06	ON 07	ON 08	ON 09	ON 10	ON 11
Boiler Chimney Dimension(mm)	180	180	250	250	250	250	250
Chimney Height	30,27	43,33	15,78	20,55	25,94	31,96	38,61
(Natural Gas) (m)	43,59	62,39	22,72	29,59	37,35	46,02	55,59

- If the fuel is natural gas

Boiler Type	*Net Cross Section of Open for Natural Airing (cm²)		**Volume of Air Needed for Force Airing (m³/h)	
***	Bottom	Up	Bottom	Up
ON 05	1.003	501	527	352
ON 06	1.146	573	631	421
ON 07	1.290	645	735	490
ON 08	1.434	717	838	559
ON 09	1.578	789	942	628
ON 10	1.722	861	1.045	697
ON 11	1.866	933	1.149	766

* If natural ventilation system is used.
** Ventilated airing system is used.
*** Bottom value shows the clean air input up shows the air output.

Plumbing Instructions :

- Fresh water must be added periodically to the plumbing. The chalk and other chemicals will connect with the system and become solid . For avoiding this , closed expansion tank must be used in the system.In the systems that closed expansion tanks are used, water will flow in closed system so it will not evaporate and lost.So in this kind of systems the water level wiill stay same and fresh water addition will not be necessary. This will prevent chalk and dust and the life of the sytem will be long.

- The water in the radiator or heating system is not healthy.Do not use this water as drinking or cleaning water.Do not take water from the system.If the water level is low , water addition is needed.

- For avoiding chalk and other chemical dust problems soft water must be used in the system.Plumbing system water quality : Ph ≥ 7,2 Th ≤ 25 °Fr

- If the city sanitary water is not in requested quality water addition from wells or other sources must be made after testing it.For reaching the requested quality additional processes must be applied to the water if needed.

- For avoiding the chalk and other dust to get in to the boiler, or from boiler to plumbing system dust holders must be placed in and out line of the system.

- Circulation pump must be connected to the water output of the boiler and the capacity of the pump must be suitable to the boiler capacity. If not,problems may occur in flowing of the water and heating efficiency of the boiler.

- For working the system properly 4 way mixture valve or thermostatic control by-pass pump must be used for increasing return water temperature.

- By connecting a three way motor valve between the forward and return line of heating system,the water that flows to the system can be controlled in ratios.

- There must be water inside of the boiler every time. If not , corrosion can occur in the boiler and the plumbing system. If the boiler will not be used in winter season, for avoid freezing , anti-freeze solution must be used.

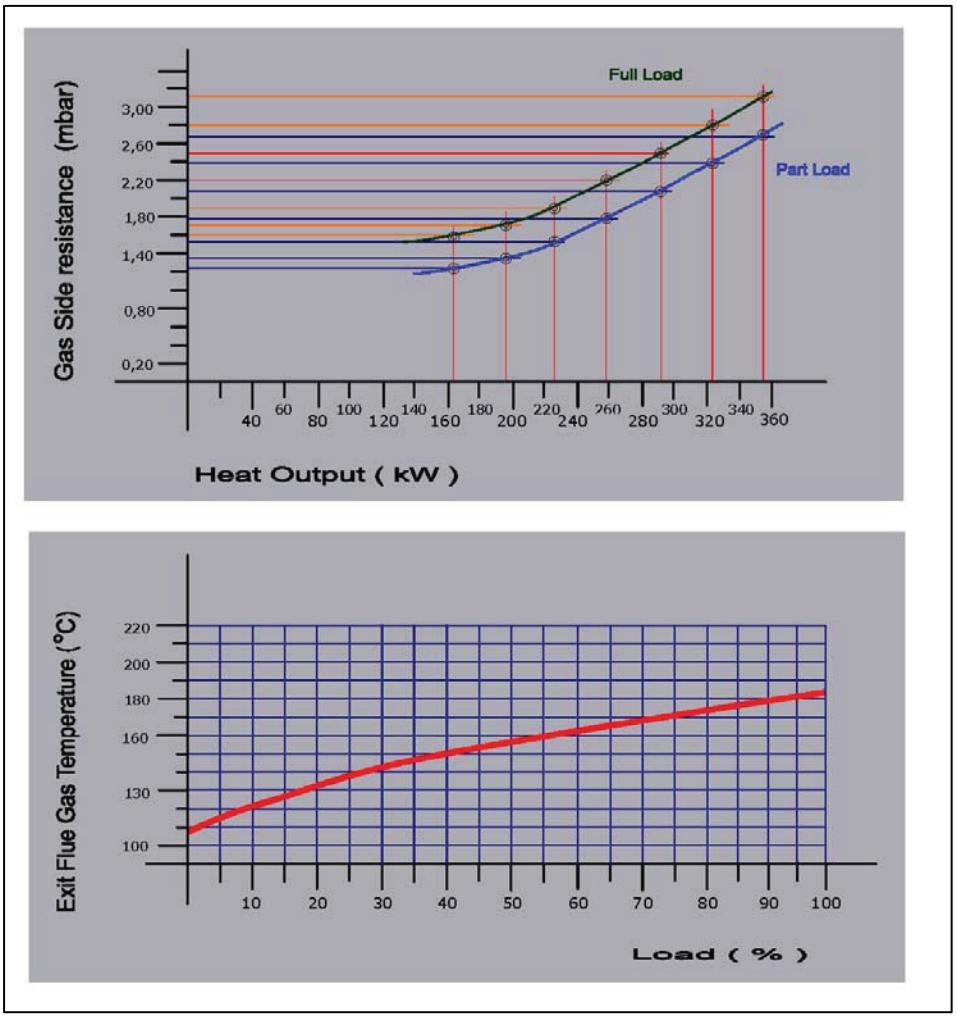
- For healthy working conditions of the boiler,temperature difference between water forward and water return must not be more than 20 °C.And boiler must not be started or work under the water volumes which is mentioned in the below table.

Boiler Type	Capacity		Δ t = 15 K		Δ t = 20 K	
	kCal/h	kW	Water Volume	Water Part Resistance	Water Volume	Water Part resistance
			m³/h	mbar	m³/h	mbar
ON 05	140.000	162,8	9,3	37,0	7,0	15,0
ON 06	167.500	194,8	11,2	27,0	8,4	17,5
ON 07	195.000	226,7	13,0	29,0	9,8	23,0
ON 08	222.500	258,7	14,8	38,0	11,1	25,0
ON 09	250.000	290,7	16,7	45,0	12,5	26,0
ON 10	277.500	322,7	18,5	71,0	13,9	31,0
ON 11	305.000	354,7	20,3	82,0	15,3	41,0

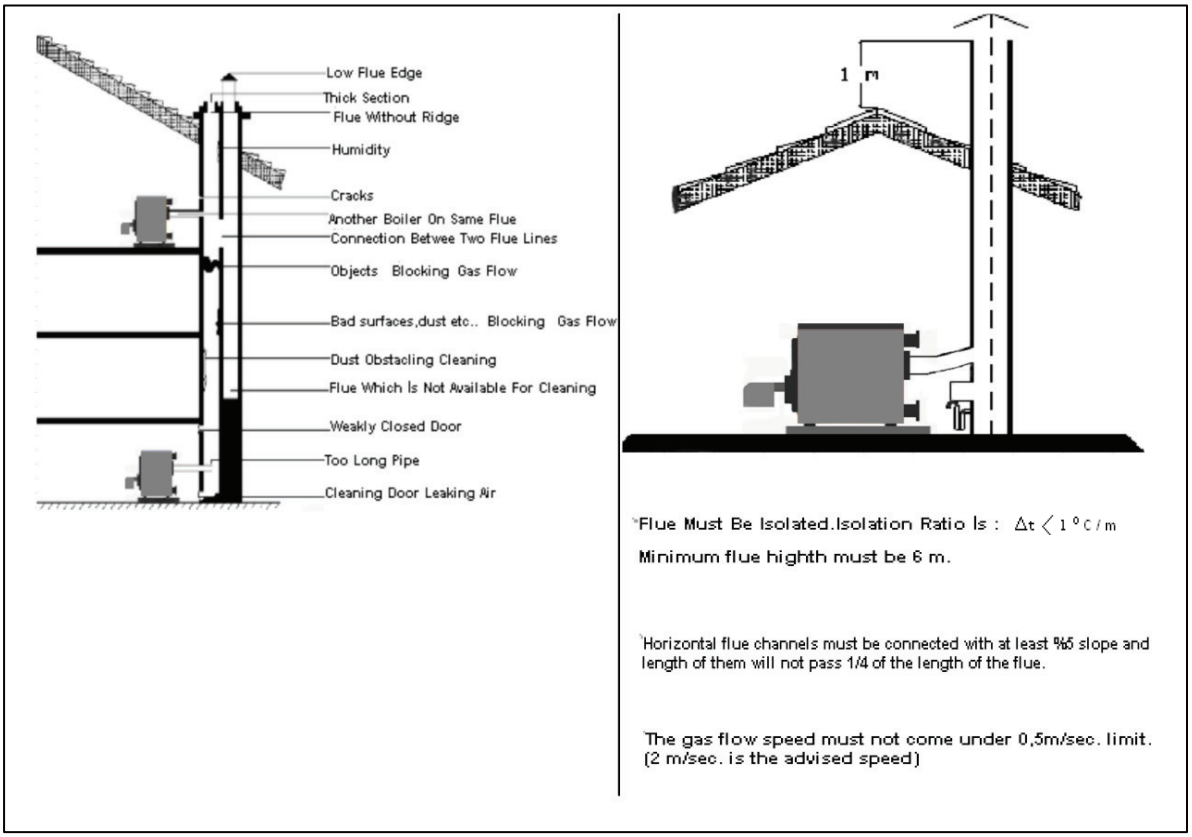
* Δ t = temperature difference

*** ON series boiler is designed,forced circulation hot water heating systems only.

Gas Side Resistance and Exit Flue Gas Temperature :

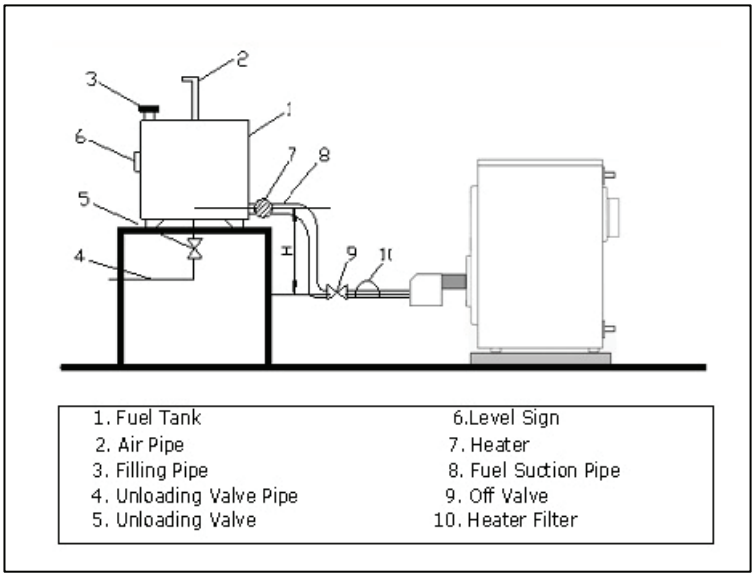


Important Instructions About Flue :


Low Flue Edge
Thick Section
Flue Without Ridge
Humidity
Cracks
Another Boiler On Same Flue
Connection Betwee Two Flue Lines
Objects Blocking Gas Flow
Bad surfaces,dust etc.. Blocking Gas Flow
Dust Obstacling Cleaning
Flue Which Is Not Available For Cleaning
Weakly Closed Door
Too Long Pipe
Cleaning Door Leaking Air
1 m
Flue Must Be Isolated.Isolation Ratio Is : Δt < 1 °C / m
Minimum flue highth must be 6 m.
Horizontal flue channels must be connected with at least %5 slope and length of them will not pass 1/4 of the length of the flue.
The gas flow speed must not come under 0,5m/sec. limit. (2 m/sec. is the advised speed)

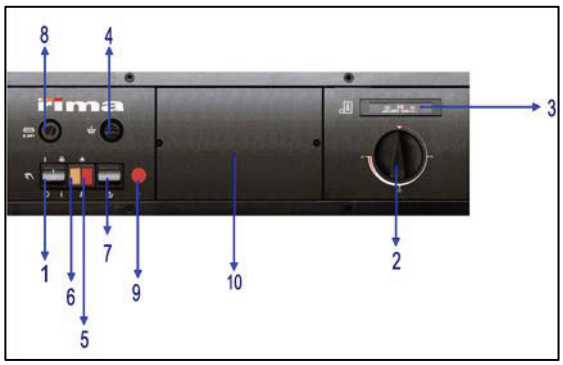
Important Instructions About Connecting the Fuel Tank :

- The platform of the fuel tank must be strong to carry the tank. If the fuel tank is outside tank , connection pipes must be isolated. Fuel tank must be placed in higher level than the burner.The height difference between the burner and fuel tank (H) must be more than 4 m. In the seasons that the boiler is not used,fuel tank must be empty for avoiding corrosion.



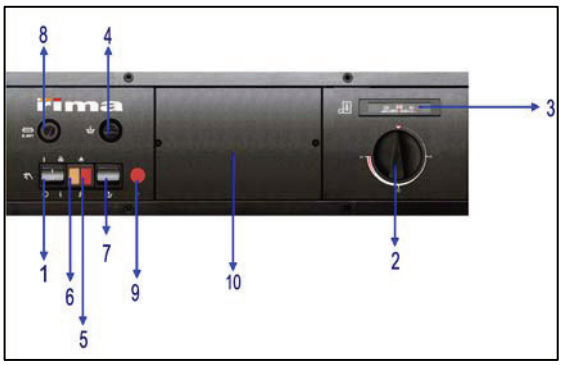
Boiler Control Panels :

Standart Control Panel (Single Stage):



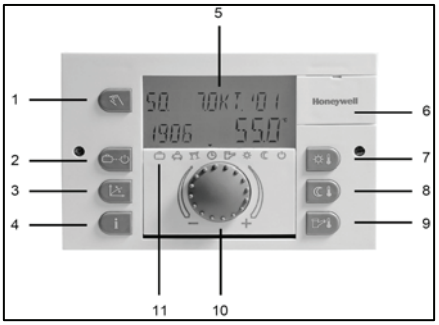
1- Main ON/OFF Switch
2- Boiler Thermostat (30-60-90 °C)
3- Boiler Thermometer
4- Safety Thermostat with manual reset (set to 100 °C)
5- Defect Indicator
6- Working Indicator
7- Reset Button
8- Fuse
9- Water pressure defect indicator
10- Ecopanel mounting place

(Dual Stage) :



1- Main ON/OFF Switch
2- Boiler (TRZ)Thermostat (60-75-90 °C):
3- Boiler Thermometer
4- Safety Thermostat with manual reset (set to 100 °C).
5- Defect Indicator
6- Working Indicator
7- Reset Button
8- Fuse
9- Water pressure defect indicator
10- Ecopanel mounting place

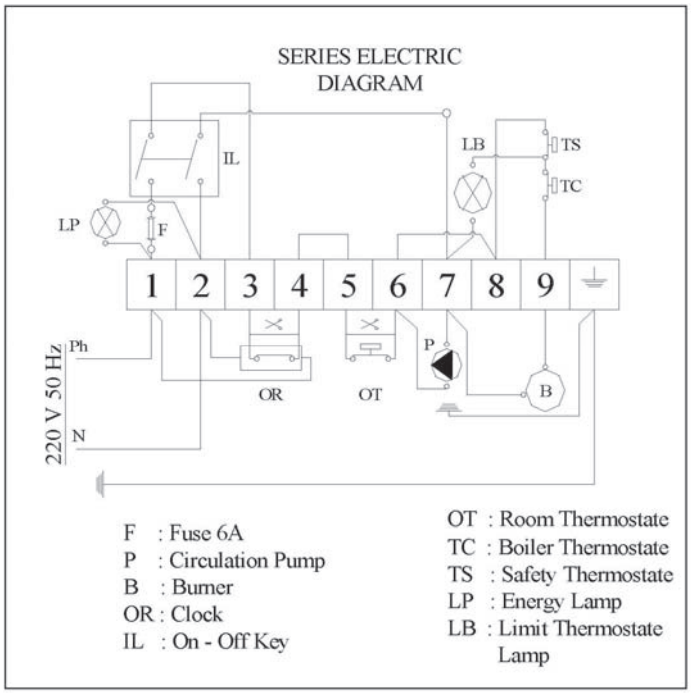
Eco Control Panel :



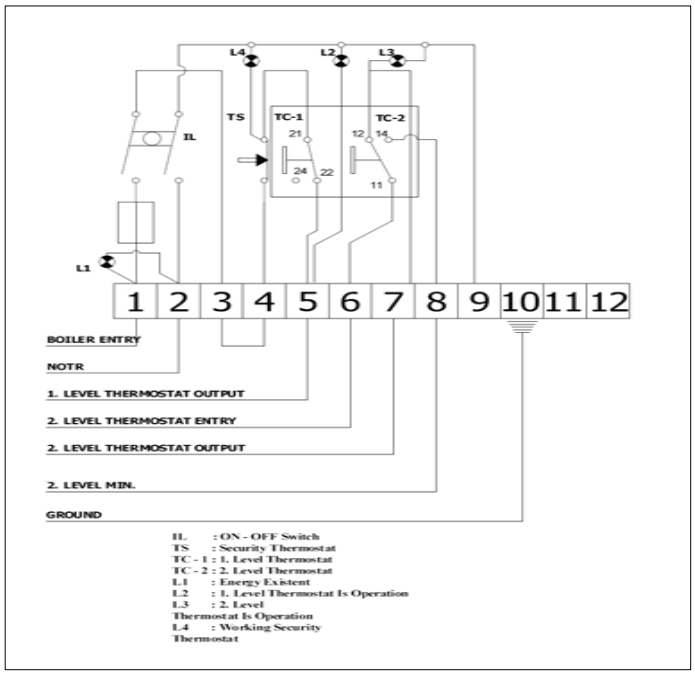
1- Manual mode key / Emission Measurement key (not applicable for district heating controllers)
2- Operating mode key for permanent and temporary operating modes (Basic display)
3- Heating characteristics key
4- Information key for the display of temperatures and operating status
5- Multi-functional Display
6- Cover clip for the service jack
7- Daytime room temperature setpoint key
8- Night-time room temperature setpoint key
9- DHW daytime temperature setpoint key
10- Rotary pushbutton (push and turn)
11- Operating modes symbols

Standard Control Panel Electric Diagram :

Single Stage :



Dual Stage :



Operating Instructions :

Heating System :

- In the system , the difference between direct flow temperature and the return temperature of the water must not be over 20 °C. The return water temperature must be over 50-55 °C. Boiler protection pump must be used for increasing the return water temperature. The water level of the system must be measured every day (if it is open system by hydrometer,if it is closed system by manometer) and water must be added if the level is measured low. But this water addition must not be made while the system is hot. If there are problems that cause water leakages they must be fixed as soon as possible. Plumbing system must be made by certificated professionals, under the terms of EN standards. EN approved materials must be used in the system.

Fuel and Electrical Connections :

- These connections must be made by certified professionals under the terms of EN standards.EN approved materials must be used in the system.Burner,control panel, ecopanel etc. Manufacturer or distrubutor warnings, instruction manuals must be read .Burner must not be started before boiler circulation starts.If circulation or protection pump has a failure burner must be switched off. This system must work coordinate. Turning the pumps on when the water heat reachs over 40 °C is completely wrong. Circulation pump and burner must work simultaneously.

- Protection pump must be chosen properly accoridng to the capacity of the boiler.The connection of the pump to the collectors must be done correctly with valve and thermostat connection. This way,system may stop in adjusted temperature.In any failure situation (contactor,thermic failure,electricity cut ,other failures.) when the pumps are not working (heating and protection pumps etc..) burner must not start. System must do this automatically.Electrical system must be made according to all above information.

Loading and Unloading the Boiler Water :

Unloading Water of the boiler :

- Plumbing and all radiator valves must be opened if the boilers water will be unloaded. All the systems water can be unloaded by boilers drainage as if the boiler is in the bottom of the system.If some part of heating system is under the boiler room,unloading the water process can be made at a point at the bottom of the system.

Loading Water of the boiler :

- Water must be loaded from the tap over the plumbing system to the boiler.During the loading process all valves of the plumbing system and the radiators must be opened.For preventing air fill to the system this operation must be made slowly and the stopper in the top must be opened. When water comes from this stopper it means that the process is finished. Air must be taken from every radiator.
  Water must be in quality which mentioned on ''plumbing instructions''.
  Boiler must not be filled up with water when it is hot. This can cause cracks in sections.

Checking and Starting the Boiler :

Checking Before Started :

- Following controls must be done before starting the boiler.If there are any problems or failure, boiler must not be started.
- Water level of the boiler must be controlled. Water must be added to the boiler if the water level is low.
- Please call rima technicians if there is a water leakage. Leakage must be prevented before starting the boiler. If there is a leakage in the plumbing system,boiler must be started after repair.
- Flue connections must be controlled. Boiler must not be started before repairing the connection if there is a problem.
- Area must be properly air conditioned.
- Gas valves must be checked as if they are on if gas fuel is used in the boiler.
- Liquid fuel level of the tank must be controlled and fuel valve must be opened if liquid fuel is used in the boiler. Fuel - burner connection must be controlled.If there are any problems , filters must be cleaned.
- Working and the directions of the pumps must be controlled.
- Electric system of the control panel must be controlled.
- All water and gas valves of the boiler must be opened.

*** All other connections must be checked according to the system options.

Getting Started :

- Turn the main electric switch of the boiler room on. Working lamp will be on.
- Start the circulation pump.
- Turn the "on / off " switch of the burner to the mode "on" (Check the burner instruction manual.) The indicator light will be on .
- Adjust the boiler temperature from the thermostat.If the burner is dual level, adjust the boiler temperature same the single stage.Dual stage (TRZ) thermostat adjust the temperature changes own by own (+ 8 °C).
- If the burner does not start , follow the instructions written on the manual of the burner.If the burner does not start after applying the written operations in the manual,call the technical service of the burner.

Stopping the Boiler :

- Turn the "on / off" switch of the burner to the " off " position
- Turn the "on / off" switch of the control panel to the " off " position.
- Turn of the circulation pump.
- Turn of the fuel valves.
- Turn off the main fuse switch of the boiler room.

Failure First Controls :

When a problem or failure occurs in the boiler or the burner,please make the following first controls before calling technical services. Don't do anything rahter than mentioned controls. After these controls call Rima technical services.

If boiler stops working and doesn't start again ; Safety thermostate may have stopped the boiler because of overheating at boiler water.In this case wait for the boiler to cool down and please make the following controls.

- Check if fuel is coming to the burner or not. If not , make fuel to come to the burner.
- Check if pump is working or not. If not , this could be the reason of overheating.Please get in touch with pump manufacturer or distributor.
- Check if the valves are on or off.Open the valves if they are closed.
- Please push the safety thermostate switch after the boiler is cold enough.
- Burner must start.
- If the boiler doesn't start or if the safety thermostate stop the boiler again please call Rima technical services.
- If the burner safety light is on ; Please check the burner instruction manual or get in contact with the burner manufacturer or distrubutor services.

Care Instructions :

Boiler and burner controls are made in three programs.Daily (in everyday use),periodic and yearly.

Daily Controls :

These are the processes that the user must apply every day in season of everyday use. Please read and apply the instructions and controls mentioned in "Pre Control" section of the manual for daily controls.

Periodic Controls :

For efficient use, preventing the possible failures and optimum life of the boiler periodic controls are important.It is recommended that periodical controls for the boiler must be made by once in every three months.These periodical controls are made by rima technicians by applying following processes.

- Boilers burning room and smoke channels check and cleaning if needed.
- Leakage controls of water input - water output of the boiler and flue connections.
- Valves check
- Pumps check
- Fuel filter control and cleaning if needed
- Burning control (with eye).Burning and flame adjustments if needed.
- Control of the liquid fuel sensor.Cleaning if needed.
- Working and safety controls of burner and the boiler.

Yearly Controls :

Yearly controls of the boiler must be made by rima technicians before the season starts. Flue and flue lines must be cleaned before calling technicians for yearly controls. In yearly controls rima technicians apply the following processes.

- Situation and the leakproof of the sections and rope isolations controls.
- Working pressure test for burning adjustment with the flue gas measurement system if needed.
- Sensors and connection of the sensors test.
- Boiler burning room and possible soot layers on smoke channels are checks and cleanings.
- Connection and the leakproof of the boilers door test.
- Leakproof of the connections of the boiler test.
- Valves test for proper opening and closing.
- Fuel filter test. Cleaning if needed.
- Sensor of the burner liquids tests.Cleaning or renewing if needed .
- Working and safety controls of burner and the boiler.

Cleaning the Boiler :

Before applying mentioned services to the boiler;electric must be cut off from the main switch,fuel valves must be closed, control panel and the burner must be protected for avoiding any possible damage.

Smoke Channels Cleaning :

Because of the soot layer on heating surfaces, 100 °C increase on flue temperature brings out a % 5 decrease on efficiency.By pulling out the M16 screws and stamps on the 4 hinges which connects door to the front section,open the burner door. Clean the burning room, take turbulators out and clean horizontal smoke channels (2nd and 3rd pass). Than clean the turbulator and put them in to the channels. Close the burner door strictly.In this cleaning operation soot layer may occur in flue area.This soot particules can be cleaned by seperating horizontal smoke channels from boiler flue. After this operation these two screws must be connected again and must be tested for leakage.

The time period for cleaning service is variable according to the fuel type of the boiler and period of use.In boiler cleaning operation ceramic ropes that isolate front door with front section and flue with back section must be controlled and must be renewed if needed.

Burner Door and Burner Connection :

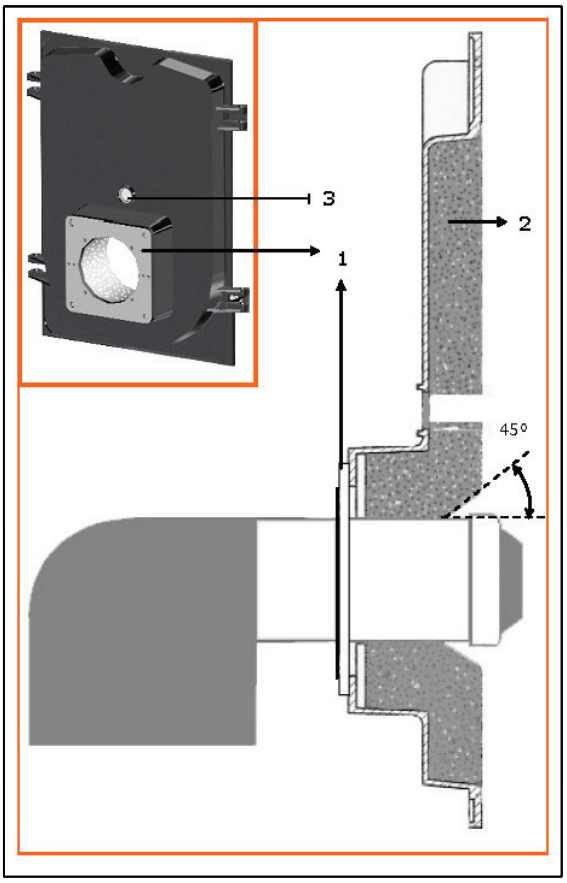
In burner connection process there must not be any empty space left between the front door and the burner barrel.All connection points must be covered with isolation material for avoiding any air leakage possibility.

A metal sheet is used for easier assembling of the burner to the door. This metal sheet is made of 10 mm thickness and in the dimensions of 255x255 mm , and burner hole dimension 132 mm (1).
The isolation of the burner door is made of a special thermal ceramic which is durable up to 1250ºC and has no defections on human health (2). Please be sure that this isolation plate is carried carefully and intensivly during transportation.

There is a ceramic rope fit in to the channels of isolation door.This prevents leakages between isolation door and front section of the boiler. After repairing or cleaning service the doors connection with the front section must be done properly,strictly.

ON series boilers doors are available for opening to both sides. This brings advantages of assembling, reparing and other operations.

A tempered ceramic glass is placed on to the burner door for watching flame inside (3).



Instructions For Product Disposal

Cast iron heating boilers are used for long years according to the specifications of its materials and they are long term equipments.
Life time period for these equipments which is declared in the legal documents is 15 years .
According to this situation renewing of these items are generally done because of technological reasons.

Cast iron boilers, which are produced with human-kind materials can be disposed of as follows .

Cast Iron Body (Gray Cast Iron)	Through iron scrap dealers and cast iron melting companies
Pipes and Cabin Steels	Through iron scrap dealers
Other Metal Parts	Through iron scrap dealers
Thermal Ceramic and other Isolation Materials	Through common waste system

***For more information please get in contact with **Rima** licensed services.

Positioning the Boiler

Rima boilers must be positioned and placed in the terms of fine protection laws with caution.

When installing and operating the boilers it is necessary to keep a safe 200 mm distance from combustible materials with combustibility degrees B,C1,C2

For easily flammable materials with combustibility degree C3 ,which burn quickly and by themselves also after the ignition source removal the safe distance is doubled it means 400 mm.

The safe distance is to be doubled also in case that the combustibility degree of building material wasn't proved.

Combustibility degrees of building materials and products	Building materials and products ranked in combustibility degrees
A- incombustible	Granite,sandstone,bricks,ceramic tiles,mortars,fireproof plasters,…
B- hardly combustible	acumin,izumin,heraklit,lignos,boards and basalt felt,fiberglass boards,…..
C_1-combustible with difficulties	Beech and oak wood, hobrex board, plywood,werzalit,……..
C_2-medium combustible	Pine wood,larch,white wood, chipboard and cork boards, rubber flooring,…….
C_3-easily combustible	Asphalt board,fireboards,polyurethane,polystyrenbe,polyethylene , PVC , ……

***For more information please get in contact with **Rima** licensed services.